the blood to the various organs at least as efficiently as does the system which actually is characteristic of each species and develops with great uniformity in all its members: and probably, indeed, such more regular systems would be mechanically more efficient Certainly, as the outcome of morphogenetic processes governed largely by physico-chemical principles among which the *Gestah* principle played a leading role, any such more regular system would be far more probable than the actual one.

It is the same in every anatomical field : the teeth, the hair, the skin, the muscles, the bones, the glands, the digestive tube, and above all the nervous system. What principles of physics and chemistry will unaided account for the formation of such a strictly useless yet complex structure as the vermiform appendix ? And many other vestigial remnants, as well as nearly all functional features, such as the distribution and direction of growth of hairs on the human skin, present similar evidences of the weight of the past history of the race in determining the course of morphogenesis. What but the past history can account for the fact that every mammal, from mouse to giraffe, has seven, and only seven, cervical vertebrae ?

This historical character of morphogenesis is one of the distinctive biological features that has no parallel in the inorganic world. A crystal may follow some irregular course of growth; but if so, it is not because other crystals of its kind have formerly followed a similar course; it is because the physico-chemical conditions of

the moment conspire to determine that irregular course.

And the same difficulty for the *Gestalt* theory of action is presented by the historical character of much behaviour. If you startle a bird from its nest, so that it flies out and